National Institute of Environmental Health Sciences

Climate variations and bacillary dysentery in northern and southern cities of China

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Abstract:

OBJECTIVES: This paper was aimed at examining the relationship between meteorological variables and bacillary dysentery in different climatic and geographic areas in China. METHODS: Jinan in northern China, with a temperate climate, and Baoan in southern China, with a subtropical climate were chosen as study areas. Spearman correlations and seasonal Autoregressive Integrated Moving Average (SARIMA) models were used to quantify the association between meteorological variables and dysentery. The Hockey Stick model was used to explore the threshold of the effect of temperatures. RESULTS: Maximum temperature, minimum temperature, rainfall, relative humidity and air pressure were significantly correlated with the incidence of dysentery in the both cities, with lag effects varying from zero to two months. In the SARIMA models, maximum and minimum temperatures were significantly associated with dysentery transmission. The thresholds for the effects of maximum and minimum temperatures were 17 degrees C and 8 degrees C, respectively, in the northern city. No thresholds were detected in the southern city. CONCLUSIONS: Climate variations have different impacts on the transmission of bacillary dysentery in temperate and subtropical cities in China. Public health action should be taken at this stage to reduce future risks of climate change with consideration of local climatic conditions.

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Resource Description

Communication:

resource focus on research or methods on how to communicate or frame issues on climate change; surveys of attitudes, knowledge, beliefs about climate change

A focus of content

Communication Audience:

audience to whom the resource is directed

Policymaker

Exposure :

weather or climate related pathway by which climate change affects health

Meteorological Factors, Meteorological Factors, Precipitation, Temperature

Geographic Feature: ☑

resource focuses on specific type of geography

Other Geographical Feature

Other Geographical Feature : Temperate;Subtropical

Geographic Location: ☑

resource focuses on specific location

Non-United States

Non-United States: Asia

Asian Region/Country: China

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Foodborne/Waterborne Disease

Foodborne/Waterborne Disease (other): Bacillary dysentery

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: ☑

type of model used or methodology development is a focus of resource

Outcome Change Prediction

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Children, Elderly, Low Socioeconomic Status

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content